iSBC® 608/618 MODULAR CARDCAGE AND BACKPLANE HARDWARE REFERENCE MANUAL

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PREFACE

This manual provides general information, specifications, installation instructions and service information for the iSBC 608/618 Modular Cardcage and Backplane. Related information is provided in the following publications, available from the Intel corporate Literature Department in Sunnyvale, California (see page ii for mailing address).

* Intel Multibus Specification, Order Number 9800683.

* iSBC Applications Handbook, Order Number 142687.

* OEM Microcomputer Systems Pocket Reference Guide, Order Number 143925.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

FIGURES

TABLES

CHAPTER 1   GENERAL INFORMATION

1-1   INTRODUCTION

The iSBC 608 Modular Cardcage and Backplane is a Multibus compatible, eight-slot board chassis with a fully integrated backplane (Figure 1-1). The iSBC 618 Modular Cardcage and Backplane is the expansion version of the iSBC 608 product.   One iSBC 618 cardcage may be stacked on the base iSBC 608 cardcage to form a complete 16 slot Multibus system.   Depending on the power requirements for the system, the expansion cardcage may use its own power supply.

This manual provides the information you will need to set up the base cardcage in your system.   Stacking instructions are provided for system expansion.
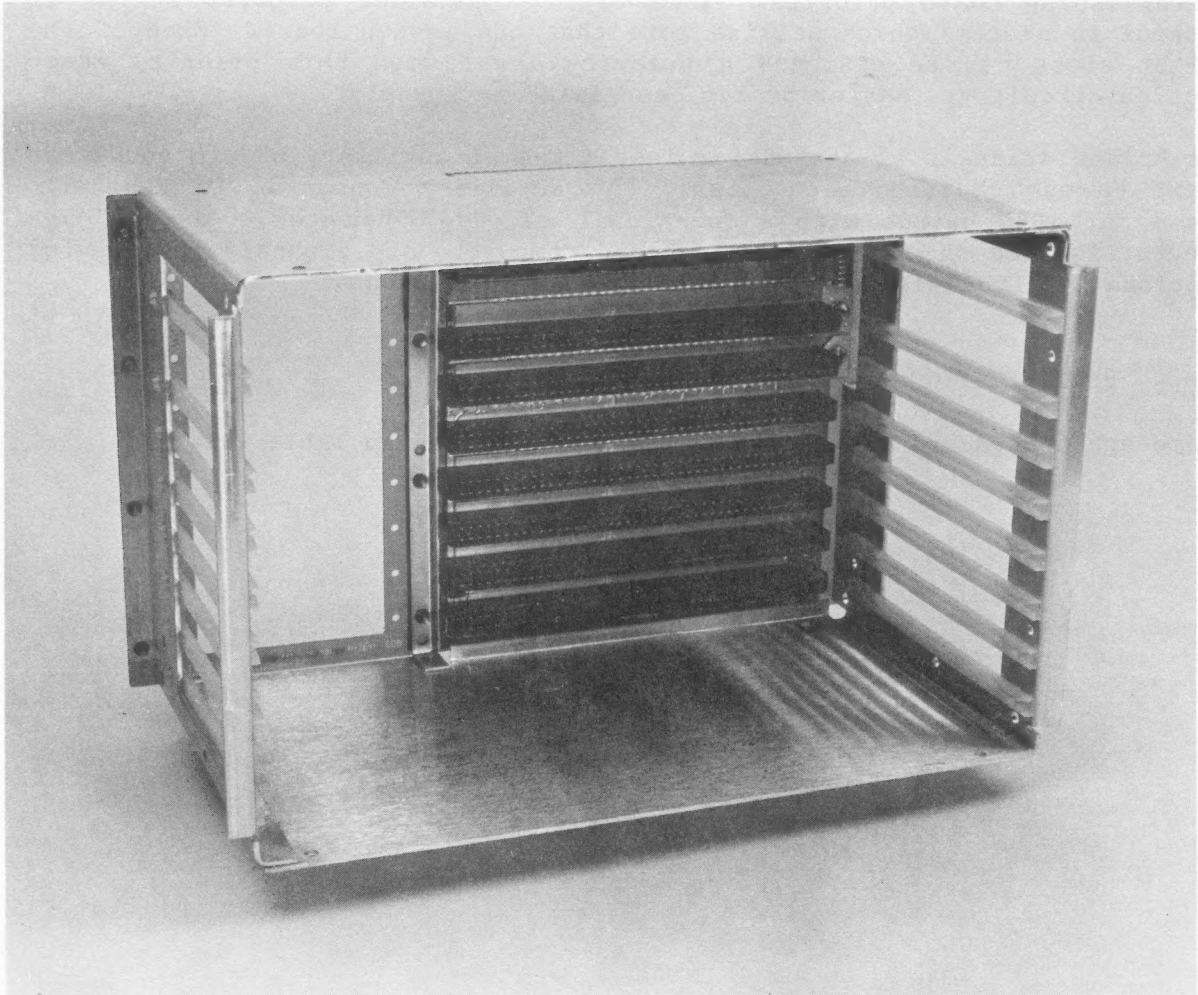
Figure 1-1.   iSBC® 608 Modular Cardcage/Backplane

- 1 -

1-2   DESCRIPTION

The cardcage and backplane will accommodate up to eight standard iSBC Multibus form factor boards. Two slots provide spacing to accomodate iSBC host boards with iSBX Multimodule boards installed, without slot penalty. All slots are iSBC Multimodule compatible without penalty. Power is routed from the power supply to the backplane with one connector and two screw-lug terminals.

System expansion to 16 slots is easily accomplished by stacking an iSBC 618 cardcage onto an iSBC 608 cardcage. All Multibus lines are routed to the expansion backplane via a single edge connector. Interleaved signal and ground traces are incorporated into the iSBC 608/618 design. This enhancement improves backplane noise immunity and minimizes signal-to-signal coupling.

Each backplane is equipped with a set of jumper connectors for use in establishing board priority. This type of parallel priority scheme is useful in systems which utilize more than one master board. Each of the eight slots can be assigned a priority level with this priority reso-lution circuitry. Master boards can reside in any slot.

Backplane space is allocated for installing an auxiliary 60-pin connector next to each Multibus connector. The auxiliary connector is typically used for iSBC boards with a functional P2 edge connector. The P2 con-nector is used on certain single board computers and expansion boards for optional control signals and battery backup provisions.

1-3   SPECIFICATIONS

Cardcage and backplane specifications are provided in Table 1-1.

Table 1-1. iSBC® 608/618 Specifications

Physical Dimensions:	Height: 8.40 inches Width: 13.16 inches Depth: 7.50 inches Weight: 3.50 pounds
Board Slot Spacing:	Top - J1: 1.20 inches (to center) J1 - J2: 1.30 inches (center to center) J2 - J3: 0.80 inches (center to center) J3 - J4: 0.80 inches (center to center) J4 - J5: 0.80 inches (center to center) J5 - J6: 0.80 inches (center to center) J6 - J7: 0.80 inches (center to center) J7 - J8: 0.80 inches (center to center) J8 - Bottom: 0.70 inches (from center)
Electrical Characteristics: (maximum current)	+5V @ 60 A Maximum +12V @ 6 A Maximum -12V @ 2 A Maximum -5V @ 2 A Maximum GND @ 60 A Maximum

Environmental Characteristics:

Operating Temperature:	0°C to 55°C
Storage Temperature:	-40°C to 85°C
Humidity:	50% to 95% non-condensing @ 25°C to 40°C
Vibration & Shock:	2G maximum through 50Hz
Minimum Airflow:	200 linear feet/minute

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CHAPTER 2   PREPARATION FOR USE

2-1   INTRODUCTION

This chapter provides installation instructions and configuration infor-
mation for the iSBC 608 Modular Cardcage and Backplane. The information
presented in this chapter includes unpacking and inspection instructions;
installation considerations such as physcial dimensions, mounting in-
structions; connector assignments; and jumper configurations.

2-2   UNPACKING & INSPECTION

Inspect the shipping carton immediately upon receipt for evidence of mis-
handling during transit. If the shipping carton is severely damaged or
waterstained, request that the carrier's agent be present when the carton
is opened. If the carrier's agent is not present when the carton is
opened and the contents are damaged, keep the carton and packing material
for the agent's inspection.

For repairs to a product damaged in shipment contact the Intel Product
Service HOTLINE to obtain a return authorization number and further in-
structions (see section 5-2). A purchase order will be required to com-
plete the repair. A copy of the purchase order should be submitted to
the carrier with your claim.

2-3   INSTALLATION CONSIDERATIONS

The iSBC 608 Cardcage can be mounted in either a vertical or horizontal
position. It can be used in a chassis or in a standalone configuration.
When an iSBC 608 Cardcage is attached to an iSBC 618 Expansion Cardcage
the stacked pair may be used with the mounting rails for installation in
an EIA compatible (19-inch) rack. The following sections describe impor-
tant installation considerations.

2-4   Physical Dimensions

Figure 2-1 provides iSBC 608 cardcage physical dimensions. Dimensions of
the iSBC 618 cardcage are identical.

2-5   Cooling Requirements

Although the cardcages do not require any cooling, they will require air flow when integrated into a system. A fan mounting bracket is provided with each cardcage for this purpose. Refer to Section 2-9 for fan mounting instructions.

2-6   Power Connections

Three separate power connections are required on the iSBC 608/618 backplane (base unit): J10, E29, and E30 (refer to figure 2-2). The +5VDC (E29) and GND (E30) connections are 10-24 machine screw terminals which are attached directly to the backplane (see Figure 2-2). Each terminal location is clearly marked on the backplane.

Connections for the +12VDC, -12VDC, and -5VDC are made through receptacle J10 on the backplane (see Figure 2-2). Compatible connectors for this plug are listed in Table 2-1.

WARNING

> When installing the terminals for +5VDC and GND, ensure each connector is placed correctly. Terminal reversal may cause severe damage to your equipment.

2-7   MULTIBUS® AND AUXILIARY CONNECTORS

The iSBC 608/618 cardcage and backplane is equipped with eight Multibus connectors. These 86-pin connectors allow any iSBC board to be readily installed into the cardcage (pin identification is provided in Figure 3-3).

Adjacent to each 86-pin Multibus connector on the backplane, space is provided for an auxiliary 60-pin connector. Not all iSBC boards require the auxiliary connector, therefore this connector is not supplied with the cardcage. Table 2-2 provides a partial list of vendors who supply compatible auxiliary connectors for iSBC systems. Auxiliary connectors are secured to the backplane with two machine screws.

2-8   CHASSIS MOUNTING

The cardcages may be mounted in a vertical or horizontal position in any chassis which provides adequate ventilation (<55°C ambient temperature @ 200 CF/M). Holes are provided on the top and bottom of the cardcage for

mounting purposes (see Figure 2-3). When an iSBC 608 Cardcage is at-tached to an iSBC 618 Expansion Cardcage the stacked pair may be used with the mounting rails for installation in an EIA compatible (19-inch) rack. See section 2-10 for stacking instructions.

Table 2-1. Compatible Power Connectors

VENDOR	PART NUMBER
3M	3399 - 6026
Ansley	609 - 2600M
Berg	65485 - 009

Table 2-2. Auxiliary Connector Sources

Function	Pins	Centers (inches)	Connector Type	Vendor P/N
Auxiliary Connector P2	30/60	0.100	Wire Wrap	Elfab BS1020A-30PBB
			With 0.128 mounting holes	TI H421121-30 Viking 3KH30/9JNK
			No Ears	Elfab BW1020D-30PBB

Notes: 1. Connector heights are not guaranteed to conform to OEM equipment.
2. Wire wrap pin lengths are not guaranteed to conform to OEM equipment.
3. Connector numbering convention may not agree with board connector.

2-9 Fan Installation

Air circulation must be provided at a minimum flow rate of 200 linear feet/minute through the cardcage. A fan installation bracket is provided with each. Table 2-3 provides a partial list of compatible fans for in-stallation on either the iSBC 608 or iSBC 618 cardcage. Install one or two fans on the mounting bracket, then install the bracket on the card-cage as shown in Figure 2-4.
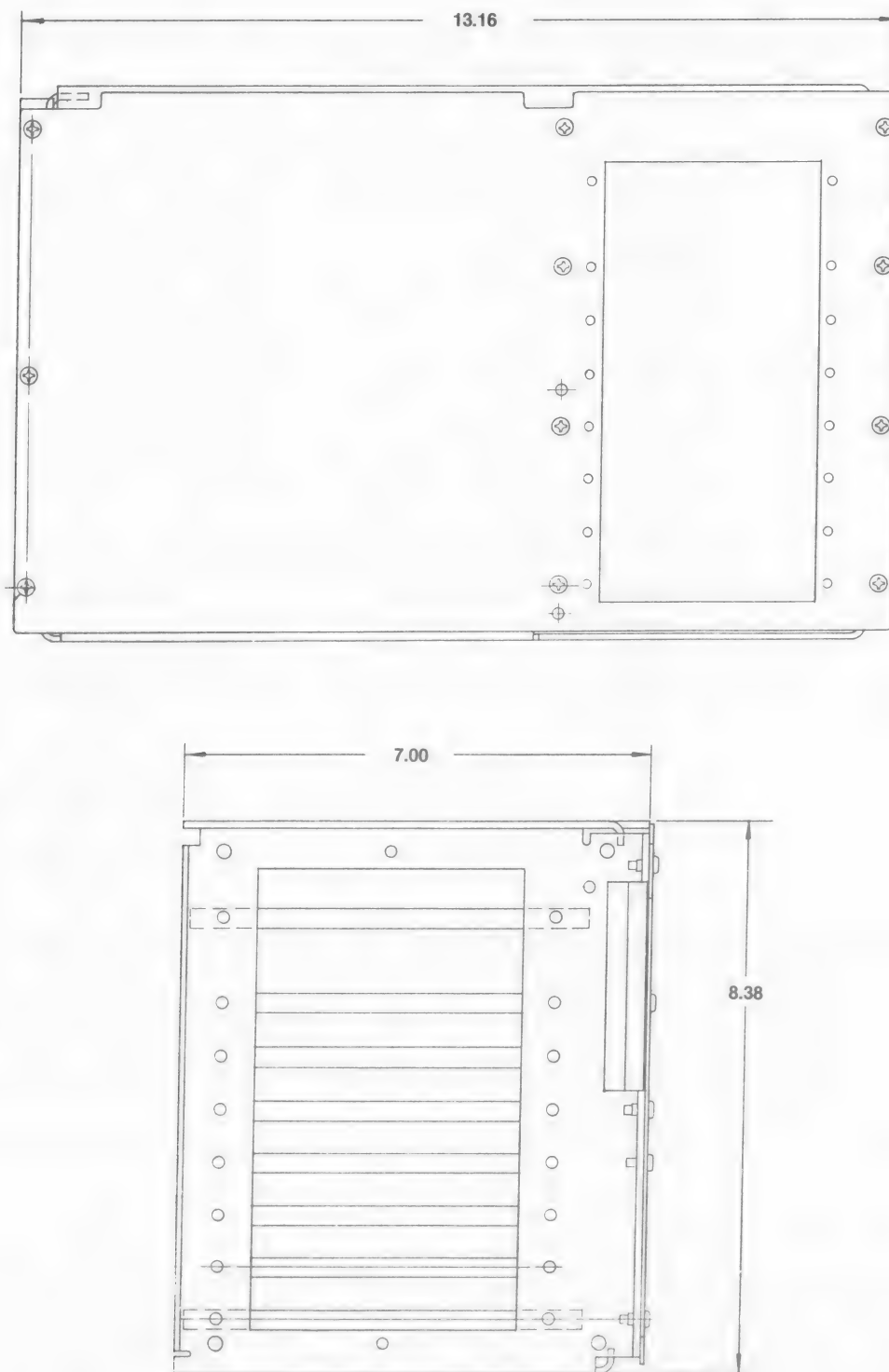
Figure 2-1. Physical Dimensions (Inches)
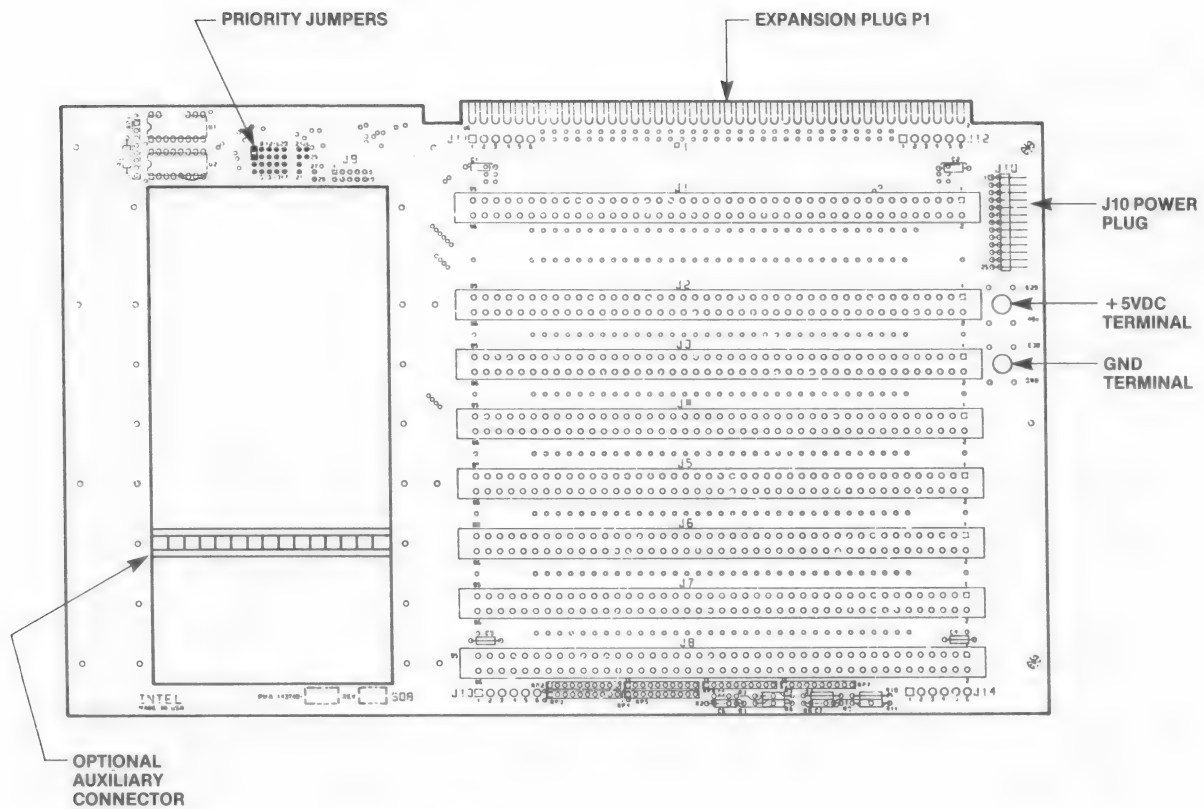
Figure 2-2. iSBC® 608/618 Backplane

Table 2-3. Compatible Fans

VENDOR	PART NUMBER
Rotron	SU2A1 - 028267
Torin	TA300 - A30473-10
Pamotor	8506D

2-10   STACKING INSTRUCTIONS

The following hardware is required for stacking one iSBC 618 expansion
cardcage on an existing iSBC 608 base cardcage (this hardware is included
with the iSBC 608 cardcage):

Four 8-32 Screws and Kep Nuts

The following steps outline the stacking procedure:

WARNING

Always remove power from the cardcage and backplane before
removing or installing an expansion cardcage. Failure to
observe this precaution may result in damage to your equpment
and may impose an electrical shock hazard on your personnel.

a. Remove power from iSBC 608 cardcage (base unit). Unplug power
    supply from AC outlet if possible.

b. Remove I/O edge connectors from iSBC boards, and remove all iSBC
    boards from the cardcage. Make a note of which slot each board
    occupies (for proper re-installation and priority).

c. Place the iSBC 618 expansion cardcage on the base unit so that
    the expansion connector interface is properly seated.

d. Install the four 8-32 screws as shown in Figure 2-3, and tighten.

e. Remove the jumper between post 23 - 24 on the iSBC 608 backplane
    to enable the 16 slot parallel priority resolution.

f. Reconfigure backplane priority jumpers to obtain desired slot
    priority order. Refer to Section 2-11 for jumper identification.

g. Install or move any auxiliary connectors required for your ap-
    plication.

h. Install rack mount rails, if required. Rails should be installed
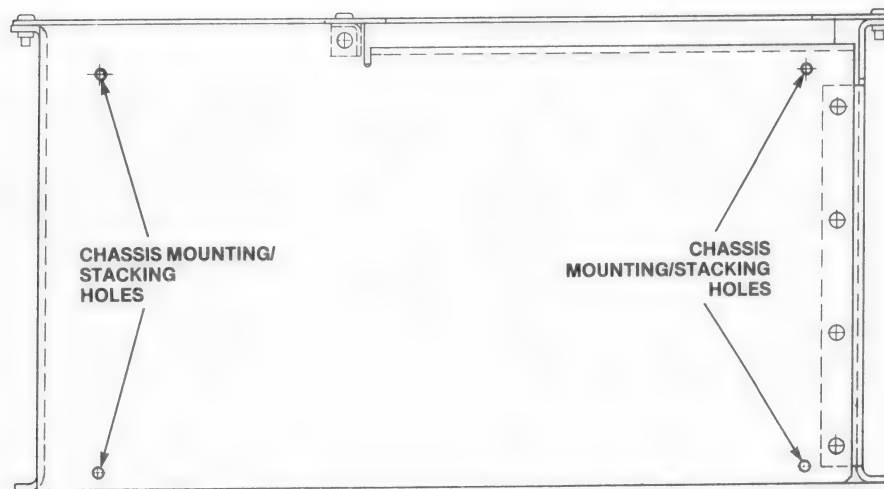   to the open end of each cardcage.
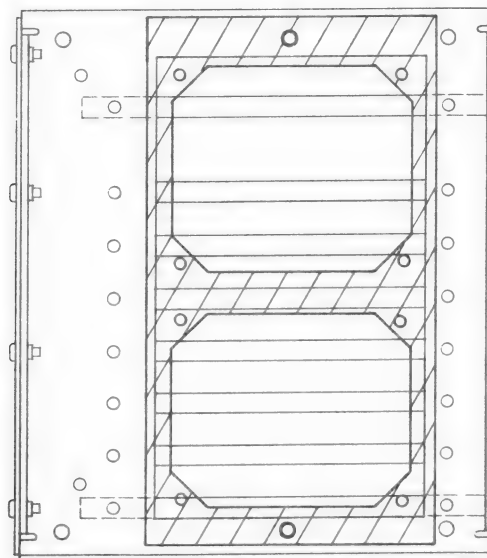
Figure 2-3. Chassis Mounting/Stacking Holes

Figure 2-4. Fan Installition Position

i. Install iSBC boards into each cardcage. Ensure that board placement
    conforms to desired priority scheme (see Section 2-11). Install I/O
    connectors onto edge connectors.

2-11   PRIORITY RESOLUTION

If your system uses more than one Multibus master board, a priority reso-
lution scheme must be established to arbitrate Multibus requests. The
iSBC 608 backplane implements a parallel priority resolution scheme by
using plug-in jumper connections (Figure 2-5). There are six different
priority schemes allowed, each requiring a different jumper configur-
ation. In each configuration, a particular board slot will have a dif-
ferent priority. Table 2-5 lists the priority slots and the corres-
ponding required jumper configuration. The factory default configuration
places the highest priority in slot J1, with each successive slot having
one level lower priority (see Table 2-5).

In systems where an iSBC 618 expansion cardcage is attached to the base
unit, the base unit will have lower priority overall. In this configur-
ation the master boards in the iSBC 608 base cardcage may gain control of
the Multibus lines only when no boards in the iSBC 618 cardcage are as-
serting the Bus Request (BREQ/) signal. Remove jumper connection 23 - 24
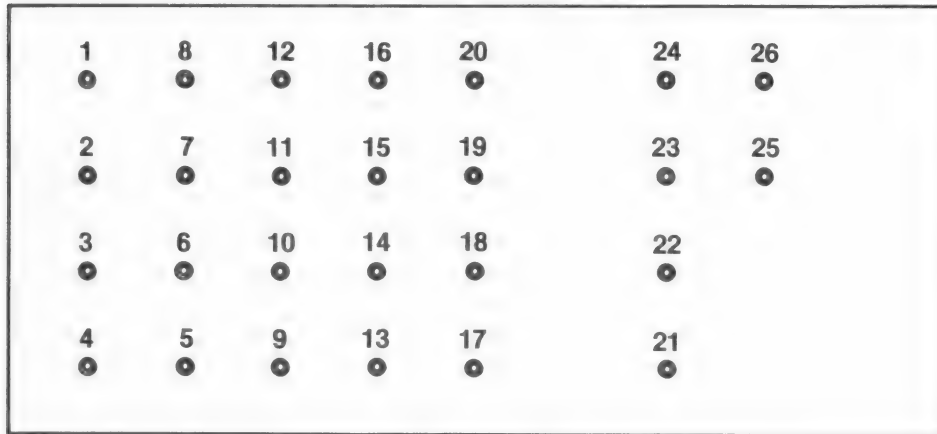on the iSBC 608 backplane to enable 16 slot resolution.

Figure 2-5. Priority Jumper Post Numbering

Table 2-4. Priority Resolution Jumper Configurations

Priority Level/Slot J8 J7 J6 J5 J4 J3 J2 J1	Jumper Connections Required
7 6 5 4 3 2 1 0	1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20, 21-22, 23-24.*
7 1 5 4 3 2 6 0	1-5, 2-6, 3-7, 4-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20, 21-22, 23-24.
0 1 5 4 3 2 6 7	1-5, 2-6, 3-7, 4-8, 9-10, 11-12, 13-17, 14-18, 15-19, 16-20, 21-22, 23-24.
0 6 5 4 3 2 1 7	1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-17, 14-18, 15-19, 16-20, 21-22, 23-24.
7 6 5 1 3 2 4 0	1-2, 3-4, 5-9, 6-10, 7-11, 8-12, 13-14, 15-16, 17-18, 19-20, 21-22, 23-24.
7 6 5 0 3 2 1 4	1-2, 3-4, 5-6, 7-8, 9-13, 10-14, 11-15, 12-16, 17-18, 19-20, 21-22, 23-24.

Notes: Priority 0 = Highest; Priority 7 = Lowest.

  *   Factory Default Configuration

CHAPTER 3   SERVICE INFORMATION

3-1   INTRODUCTION

This chapter provides service assistance information, a schematic diagram of the backplane and a parts list.

3-2   SERVICE AND REPAIR ASSISTANCE

United States Customers can obtain service and repair assistance by contacting the Intel Product Service Hotline in Phoenix, Arizona. (refer to telephone number below.) Customers outside the United States should contact their sales source (Intel Sales Office or Authorized Distributor) for service information and repair assistance.

Before calling the Product Service Hotline, you should have the following information available:

   a.   Date you received the product.

   b.   Complete part number of the product (including dash number).   On boards, this number is usually silk-screened onto the board.   On other products, it is usually stamped on a label.

   c.   Serial number of product.   On boards, this number is usually stamped on the board.   On other products, the serial number is usually stamped on a label.

   d.   Shipping and billing addresses.

   e.   If your Intel product warranty has expired, you must provide a purchase order number for billing purposes.

   f.   If you have an extended warranty agreement, be sure to inform the Hotline personnel of this agreement.

Use the following numbers for contacting the Intel Product Service Hotline:

TELEPHONE:

All U.S. locations, except Alaska, Arizona, & Hawaii:

(800) 528 - 0595

All other locations: (602) 869 - 4600

TWX NUMBER:

910 - 951 - 1330

Always contact the Product Service Hotline before returning a product to Intel for repair. You will be given a repair authorization number, shipping instructions, and other important information which will help Intel provide you with fast, efficient service. If you are returning the product because of damage sustained during shipment or if the product is out of warranty, a purchase order is required before Intel can initiate the repair.

In preparing the product for shipment to the Repair Center, use the original factory packing material, if possible. If this material is not available, wrap the product in a cushioning material such as Air Cap TH - 240, manufactured by the Sealed Air Corporation, Hawthorne, N.J. Then enclose in a heavy duty corrugated shipping carton, and label "FRAGILE" to ensure careful handling. Ship only to the address specified by Product Service Hotline personnel.

3-3   REPLACEMENT PARTS

Replacement parts for the iSBC 608 and 618 cardcages are listed in Table 3-1. Backplane parts are shown in Figure 3-1.

3-4   SCHEMATIC DIAGRAM

A schematic diagram of the backplane is shown in Figure 3-2.

Table 3-1. Replacement Parts

PART NUMBER	DESCRIPTION	QUANTITY
iSBC 608 Cardcage:		
143255-003	Cardcage/Backplane Assembly	1
143998-001	Fan Bracket	1
144161-001	EIA Rack Mounting Rail	2
103417-050	Screw, PanHead 8-32 x 0.44	6
143966-001	Mounting Bracket, Cardcage	4
103417-071	Screw, PH, 10-32 x 0.88	6
103444-008	Nut, Kep 8-32	2
iSBC 608 Backplane:		
143741-001	PWB, 8-Slot Backplane	1
101762-049	Capacitor 0.1uf +80-20%, 50V (C1-4)	4
100632-021	IC, 74S138 (U1)	1
100637-001	IC, 74148 (U2)	1
101655-059	Resistor, 220 ohm, 5%, 1/4W (R6, 11)	2
101655-089	Resistor, 320 ohm, 5%, 1/4W (R2, 8)	2
101656-030	Resistor, 510 ohm, 5%, 1/4W (R10)	1
101655-004	Resistor, 10K ohm, 5%, 1/4W (R1)	1
101655-061	Resistor, 22K ohm, 5%, 1/4W (R7)	1
101655-003	Resistor, 1K ohm, 5%, 1/4W (R5)	1
101736-023	Resistor Pack, 1K ohm, 2% (RP6,7)	2
101736-028	Resistor Pack, 2.2K ohm, 2% (RP2-5)	4
101729-038	Resistor Pack, 10K ohm, 2% (RP1)	1
102247-001	Multibus Connector (J1-8)	8
106891-013	Connector RA 26 Pin (J10)	1
102743-001	Stake Pin (E1-28, J9-1 to J9-10)	38
102480-001	Shorting Plug	13
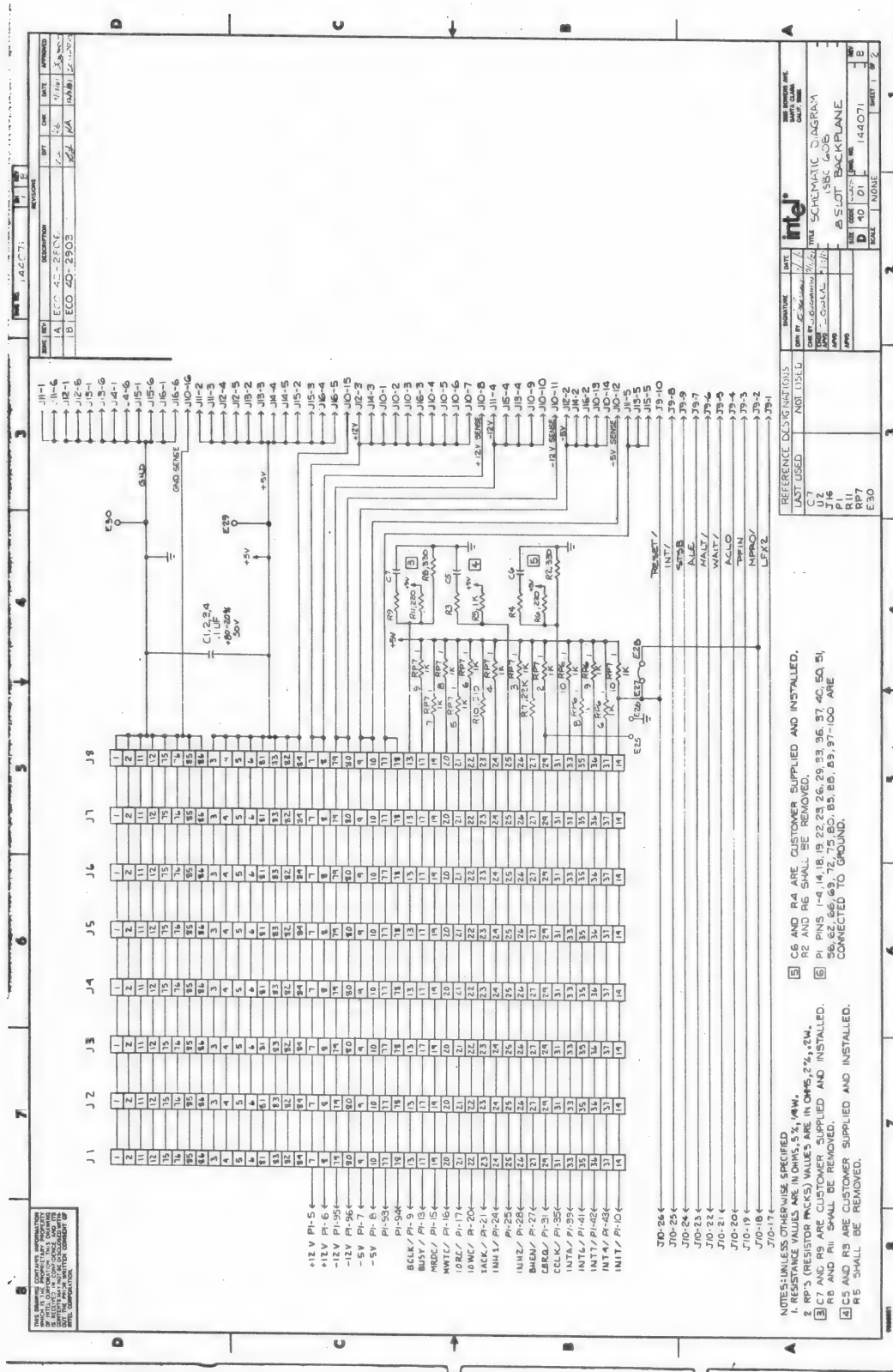
Figure 3-1. iSBC 608/618 Backplane

Figure 3-2. iSBC 608/618 Schematic (Sheet 1)
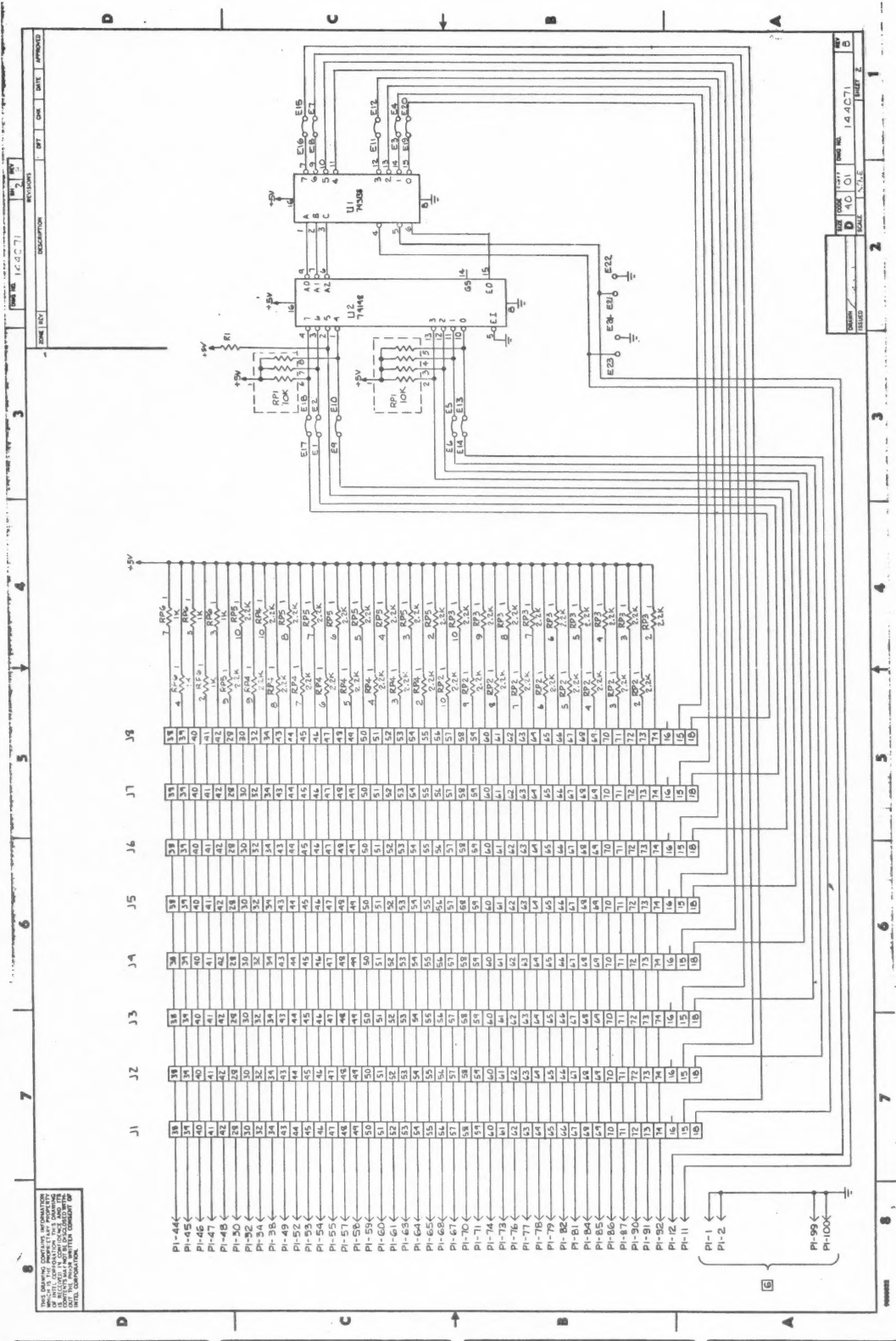
Figure 3-2. iSBC 608/618 Schematic (Sheet 2)

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